Claims:

1. A bi-specific complex for targeting a target cell, wherein said complex comprises two different target recognition components, each of said components comprising a molecule which specifically binds to a first and second targets located on said target cell, respectively, or any functional fragment thereof, wherein one target is the inhibitory receptor IRp60 or homologues thereof, and the second target is a cell specific activator which activates the inhibitory pathway mediated by said inhibitory receptor.

2. The bi-specific complex of claim 1, wherein the binding of said complex to said target cell inhibits allergic-type reactions.

3. The bi-specific complex of claim 2, wherein said target recognition components are linked via any one of a cross-linker, a linker compound, a carrier, a synthetic spacer, an immobilizing substrate and a $(Gly_4Ser)_3$ motif based flexible region.

4. The bi-specific complex of claim 3, wherein said target recognition components are cross-linked.

5. The bi-specific complex of any one of claims 1 to 4, wherein said cell is derived from the hematopoietic lineage.

6. The bi-specific complex of claim 5, wherein said cell is any one of a mast cell, an eosinophil and a basophil.

7. The bi-specific complex of any one of claims 1 to 6, wherein the second target may be selected from the group consisting of immunoglobulins, Fc receptors, cytokine receptors, growth factor receptors, adhesion molecules, Ig-superfamily receptors, chemokine receptors, inflammatory mediator

receptor, hormone receptors, complement factor receptors, protease-activated receptors and enzymes.

8. The bi-specific complex of any one of the preceding claims, wherein said recognition component is selected from any one of a naturally occurring, synthetic or recombinant antibody, single chain Fv (scFv), bi-functional scFv, diabody, F(ab) unit, F(ab') unit, bi-specific F(ab') conjugate, chemically cross-linked bi-functional antibody, linear antibody, F(ab')2 antigen binding fragment of an antibody, or any functional fragments thereof.

9. The bi-specific complex of claim 8, wherein said recognition component is preferably a F(ab') unit.

10. The bi-specific complex of any one of claims 1 to 9, wherein said target cell is a mast cell.

11. The bi-specific complex of claim 10, wherein the second target is one of IgE, cKIT and FcεRI.

12. A bi-specific complex for targeting a target cell, wherein said complex comprises two cross-linked F(ab') units, one of them recognizing IRp60 or any homologues thereof, and the second recognizing IgE.

13. A bi-specific complex for targeting a target cell, wherein said complex comprises two cross-linked F(ab') units, one of them recognizing IRp60 or any homologues thereof, and the second recognizing cKIT.

14. A bi-specific complex for targeting a target cell, wherein said complex comprises two cross-linked F(ab') units, one of them recognizing IRp60 or any homologues thereof, and the second recognizing FcεRI.

15. The bi-specific complex of any one of claims 1 to 14, wherein said complex may function as an inhibitor of mast cell activity.

16. The bi-specific complex of any one of claims 1 to 9, wherein said target cell is an eosinophil.

17. The bi-specific complex of claim 16, wherein the second target is one of IL-5 receptor (IL-5R) and the receptor to eotaxin (CCR3).

18. A bi-specific complex for targeting a target cell, wherein said complex comprises two cross-linked F(ab') units, one of them recognizing IRp60 or any homologues thereof, and the second recognizing IL-5R.

19. A bi-specific complex for targeting a target cell, wherein said complex comprises two cross-linked F(ab') units, one of them recognizing IRp60 or any homologues thereof, and the second recognizing CCR3.

20. The bi-specific complex of any one of claims 1 to 9 and 16 to 19, wherein said complex may function as an inhibitor of eosinophil activity.

21. The bi-specific complex of any one of claims 1 to 20, wherein said complex may function as an inhibitor of allergy effector cell activity.

22. The bi-specific complex of any one of the preceding claims, for treating conditions induced by one of allergic reactions and mast cell- and/or eosinophil- and/or basophil-mediated reactions.

23. The bi-specific complex of claim 22, wherein said conditions are selected from the group consisting of: allergic asthma, allergic rhinitis, seasonal allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic graft versus host disease (GVHD), eosinophil myalgia syndrome, extrinsic bronchial asthma, nasal polyposis, Wegener's granulomatosis, intrinsic bronchial asthma, interstitial and other pulmonary diseases, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, sarcoidosis, idiopathic pulmonary fibrosis, toxocariasis, filariasis, schistosomiasis, trichinosis, neoplastic and myeloproliferative diseases, T cell lymphomas and Hodgkin's disease.

24. The bi-specific complex of any one of claims 10 to 15, for use as an agent in the treatment of mast cell associated conditions, wherein said conditions are particularly allergic asthma, allergic rhinitis, seasonal allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic graft versus host disease (GVHD).

25. The bi-specific complex of any one of claims 10 to 15, for use as an agent in the treatment of eosinophil-associated conditions, wherein said conditions are particularly extrinsic bronchial asthma, allergic rhinitis, onchocercal dermatitis, atopic dermatitis, nasal polyposis, nodules, eosinophilia, rheumatism, dermatitis, and swelling (NERDS), vasculitic granulomatous diseases, temporal vasculitis, Churg-Strauss syndrome, polyarteritis, Wegener's granulomatosis, multiple sclerosis, graft rejection, bronchial asthma, interstitial and other pulmonary diseases, eosinophilic pleural effusions, transient pulmonary eosinophilic infiltrates (Löffler), histiocytosis, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, sarcoidosis, idiopathic pulmonary fibrosis, topical eosinophilia, cat scratch disease, afebrile tuberculosis, chlamydial pneumonia at infancy, neoplastic and myeloproliferative diseases, bronchogenic carcinoma, hypereosinophilic syndrome, T cell lymphomas and Hodgkin's disease, Crohn's disease, vernal keratoconjunctivitis nevus, Kimura's disease, Gleich's disease.

26. A pharmaceutical composition comprising as active agent the bi-specific complex of any one of claims 1 to 15.

27. A pharmaceutical composition comprising as active agent the bi-specific complex of any one of claims 1 to 9 and 16 to 19.

28. The pharmaceutical composition of any one of claims 26 and 27, for medical use.

29. The pharmaceutical composition of claim 26, for use in the treatment of any disease or condition derived from mast cell hyperactivity or hyperplasia.

30. The pharmaceutical composition of claim 29, wherein said diseases are selected from the group consisting of: allergic asthma, allergic rhinitis, allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic GVHD, bronchial asthma, nasal polyposis, Wegener's granulomatosis, interstitial and other pulmonary diseases, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, idiopathic pulmonary fibrosis, neoplastic and myeloproliferative diseases, T cell lymphomas and Hodgkin's disease.

31. The pharmaceutical composition of claim 27, for use in the treatment of any disease or condition derived from eosinophil hyperactivity or hyperplasia.

32. The pharmaceutical composition of claim 31, wherein said conditions are selected from the group consisting of extrinsic bronchial asthma, allergic rhinitis, onchocercal dermatitis, atopic dermatitis, nasal polyposis, nodules, eosinophilia, rheumatism, dermatitis, and swelling (NERDS), vasculitic granulomatous diseases, temporal vasculitis, Churg-Strauss syndrome, polyarteritis, Wegener's granulomatosis, multiple sclerosis, graft rejection, bronchial asthma, interstitial and other pulmonary diseases, eosinophilic pleural effusions, transient pulmonary eosinophilic infiltrates (Löffler), histiocytosis, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, idiopathic pulmonary fibrosis, topical eosinophilia, cat scratch disease, afebrile tuberculosis, chlamydial pneumonia at infancy, neoplastic and

myeloproliferative diseases, bronchogenic carcinoma, hypereosinophilic syndrome, T cell lymphomas and Hodgkin's disease, Crohn's disease, vernal keratoconjunctivitis, juvenile inflamed conjunctivitis nevus, Kimura's disease, Gleich's disease.

33. The pharmaceutical composition of any one of the preceding claims, further comprising buffers, additives, stabilizers, diluents and/or excipients.

34. Use of the bi-specific complex of any one of claims 1 to 25, in the preparation of a pharmaceutical composition for the treatment of any disease or condition associated with mast cell and/or eosinophil hyperactivity or hyperplasia.

35. The use of claim 27, wherein said disease is selected from the group consisting of: allergic asthma, allergic rhinitis, allergic conjunctivitis, atopic dermatitis and atopic eczema, allergic disorders and responses to various allergens, systemic anaphylaxis, systemic mastocytosis, morphea/urticaria pigmentosa, mast cell leukemia, atherosclerosis, graft rejection, multiple sclerosis, fibrotic lung diseases, neurofibromatosis, keloids, scleroderma, rheumatoid arthritis, osteoarthritis, acute gout, ocular cicatricial pemphigoid, Crohn's disease, peritoneal adhesions, chronic graft versus host disease (GVHD), eosinophil myalgia syndrome, bronchial asthma, nasal polyposis, Wegener's granulomatosis, interstitial and other pulmonary diseases, chronic eosinophilic pneumonia, hypersensitivity pneumonitis, allergic bronchopulmonary aspergillosis, sarcoidosis, idiopathic pulmonary fibrosis, neoplastic and myeloproliferative diseases, T cell lymphomas and Hodgkin's disease.

36. Use of the bi-specific complex of any one of claims 1 to 15 or the pharmaceutical composition comprising thereof, in the inhibition of mast cell function.

37. Use of the bi-specific complex of any one of claims 1 to 9 and 16 to 19, or the pharmaceutical composition comprising thereof, in the inhibition of eosinophil function.

38. A method of treatment of any disease or condition associated with mast cell hyperactivity and hyperplasia, comprising administering a therapeutically effective amount of the bi-specific complex of claims 1 to 17 or a composition comprising thereof to a subject in need.

39. A method of treatment of any disease or condition derived from eosinophil hyperactivity and hyperplasia, comprising administering a therapeutically effective amount of the bi-specific complex of claims 1 to 9 and 16 to 19 or a composition comprising thereof to a subject in need.

40. A method of inhibiting mast cell activity comprising contacting mast cells with the bi-specific complex of claims 1 to 15, or with a composition comprising thereof, for a suitable amount of time.

41. A method of inhibiting eosinophil activity comprising contacting eosinophils with the bi-specific complex of any one of claims 1 to 9 and 16 to 19, or with a composition comprising thereof, for a suitable amount of time.